

**AMENDMENTS TO THE CLAIMS:**

1. (Previously Presented) A method for communicating between a first private network and a second private network configured from nodes in a public network, comprising:
  - receiving a non-tunneled packet from a source node in the first private network;
  - determining whether the packet is destined for the second private network;
  - obtaining an address mapping corresponding to a destination node in the second private network and acquiring a channel key associated with a channel based on the determination,
    - wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the destination node,
    - wherein only the channel nodes are permitted to communicate over the channel,
    - wherein the channel key is updated upon an addition of a new channel node to the channel, and
    - wherein the channel key is updated upon a departure of one of the channel nodes from the channel; and
  - forwarding the packet over the channel to the destination node.
2. (Previously Presented) The method of claim 1, said forwarding comprising:
  - sending the packet to the destination node using the address mapping, the address mapping reflecting a relationship between an internal address for the destination node for use in communicating among nodes in the second private network and an external address for the destination node suitable for communicating over the public network.
3. (Previously Presented) The method of claim 2, said sending further comprising,

adding the external address to the packet.

4. (Previously Presented) The method of claim 2, said sending further comprising, encrypting the packet.
5. (Previously Presented) The method of claim 2, said obtaining comprising, accessing the address mapping based on a determination that the packet is destined for the second private network.
6. (Previously Presented) The method of claim 1, said determining comprising, determining whether an address mapping exists for a destination address in the packet.
7. (Previously Presented) A method for communicating between a first private network and a second private network configured from nodes in a public network, comprising:
  - receiving a non-tunneled packet from a source node in the first private network;
  - determining whether the packet is destined for the second private network;
  - obtaining an address mapping corresponding to a destination node in the second private network and acquiring a channel key associated with a channel based on the determination,
    - wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the destination node,
    - wherein only the channel nodes are permitted to communicate over the channel,
    - wherein the channel key is updated upon an addition of a new channel node to the channel, and

wherein the channel key is updated upon a departure of one of the channel nodes from the channel; and  
sending the packet over the channel to the destination node using the address mapping, the address mapping reflecting a relationship between an internal address for the destination node for use in communicating among nodes in the second private network and an external address for the destination node suitable for communicating over the public network.

8. (Previously Presented) A method for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:

receiving a non-tunneled packet from a source node in the second private network;  
determining whether the packet is destined for the second private network;  
obtaining an address mapping corresponding to a router node in the first private network and acquiring a channel key associated with a channel based on the determination,  
wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the router node,  
wherein only the channel nodes are permitted to communicate over the channel,  
wherein the channel key is updated upon an addition of a new channel node to the channel, and  
wherein the channel key is updated upon a departure of one of the channel nodes from the channel; and  
forwarding the packet over the channel to a destination node in the first private network.

9. (Previously Presented) The method of claim 8, said forwarding comprising:
  - sending the packet to the router node using the address mapping, wherein the router node forwards the packet to the destination node based on an internal address in the packet for the destination node suitable for communicating among nodes in the first private network.
10. (Previously Presented) The method of claim 9, said sending further comprising, adding, to the packet, an external address for the router node suitable for communicating over the public infrastructure.
11. (Previously Presented) The method of claim 9, said sending further comprising, encrypting the packet.
12. (Previously Presented) The method of claim 9, said obtaining comprising, accessing the address mapping based on a determination that the packet is not destined for the second private network.
13. (Previously Presented) The method of claim 8, said determining comprising, determining whether an address mapping exists for a destination address in the packet.
14. (Previously Presented) A method for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:
  - receiving a non-tunneled packet from a source node in the second private network;
  - determining whether the packet is destined for the second private network;
  - obtaining an address mapping corresponding to a router node and acquiring a channel key associated with a channel based on the determination,

wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the router node, wherein only the channel nodes are permitted to communicate over the channel, wherein the channel key is updated upon an addition of a new channel node to the channel, and wherein the channel key is updated upon a departure of one of the channel nodes from the channel; and sending the packet over the channel to the router node using the address mapping, wherein the router node forwards the packet to a destination node in the first private network based on an internal address in the packet for the destination node suitable for communicating among nodes in the first private network.

15. (Previously Presented) An apparatus for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:

a memory having program instructions; and  
a processor responsive to the program instructions to:  
receive a non-tunneled packet from a source node in the first private network,  
determine whether the packet is destined for the second private network,  
acquire a channel key associated with a channel based on the determination,  
wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source

node and a destination node in the second private network,  
wherein only the channel nodes are permitted to communicate over the channel,  
wherein the channel key is updated upon an addition of a new channel node to the channel, and  
wherein the channel key is updated upon a departure of one of the channel nodes from the channel;  
and  
forward the packet over the channel to the destination node.

16. (Previously Presented) An apparatus for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:
- a memory having program instructions; and
  - a processor responsive to the program instructions to:
    - receive a non-tunneled packet from a source node in the second private network,
    - determine whether the packet is destined for the second private network, and
    - acquire a channel key associated with a channel based on the determination,
    - wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and a destination node in the first private network,
    - wherein only the channel nodes are permitted to communicate over the channel, [[and]]

wherein the channel key is updated upon an addition  
of a new channel node to the channel, and  
wherein the channel key is updated upon a departure  
of one of the channel nodes from the channel;  
and  
forward the packet over the channel to the destination node.

17. (Previously Presented) A tangible computer-readable storage medium containing instructions which, when executed by a processor, perform a method for communicating between a first private network and a second private network that uses a public network infrastructure, the method comprising:
  - receiving a non-tunneled packet from a source node in the first private network;
  - determining whether the packet is destined for the second private network;
  - obtaining an address mapping corresponding to a destination node in the second private network and acquiring a channel key associated with a channel based on the determination,
    - wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the destination node,
    - wherein only the channel nodes are permitted to communicate over the channel,
    - wherein the channel key is updated upon an addition of a new channel node to the channel, and
    - wherein the channel key is updated upon a departure of one of the channel nodes from the channel; and
  - sending the packet over the channel to the destination node using the address mapping, the address mapping reflecting a relationship between an internal address for the destination node for use in communicating among nodes in the second private network and an

external address for the destination node suitable for  
communicating over the public infrastructure.

18. (Previously Presented) The computer-readable medium of claim 17, said sending further comprising,  
adding the external address to the packet.
19. (Previously Presented) The computer-readable medium of claim 17, said sending further comprising,  
encrypting the packet.
20. (Previously Presented) The computer-readable medium of claim 17, said obtaining comprising,  
accessing the address mapping based on a determination that the packet  
is destined for the second private network.
21. (Previously Presented) The computer-readable medium of claim 17, said determining comprising,  
determining whether an address mapping exists for a destination address  
in the packet.
22. (Previously Presented) A tangible computer-readable storage medium containing instructions which, when executed by a processor, perform a method for communicating between a first private network and a second private network that uses a public network infrastructure, the method comprising:  
receiving a non-tunneled packet from a source node in the second private  
network;  
determining whether the packet is destined for the second private network;  
obtaining an address mapping corresponding to a router node and  
acquiring a channel key associated with a channel based on the  
determination,



wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the router node, wherein only the channel nodes are permitted to communicate over the channel, wherein the channel key is updated upon an addition of a new channel node to the channel, and wherein the channel key is updated upon a departure of one of the channel nodes from the channel; and sending the packet over the channel to the router node using the address mapping, wherein the router node forwards the packet to a destination node in the first private network based on an internal address in the packet for the destination node suitable for communicating among nodes in the first private network.

23. (Previously Presented) The computer-readable medium of claim 22, said sending further comprising,  
adding, to the packet, an external address for the router node suitable for communicating over the public infrastructure.
24. (Previously Presented) The computer-readable medium of claim 22, said sending further comprising,  
encrypting the packet.
25. (Previously Presented) The computer-readable medium of claim 22, said obtaining comprising,  
accessing the address mapping based on a determination that the packet is not destined for the second private network.

26. (Previously Presented) The computer-readable medium of claim 22, said determining comprising,  
determining whether an address mapping exists for a destination address in the packet.
- 27-36. (Cancelled).
37. (Previously Presented) A method for communicating between a first private network and a second private network configured from nodes in a public network, comprising:  
receiving, at a router node, a first non-tunneled packet from a source node in the first private network, wherein the router node facilitates connection between the first private network and the second private network;  
determining whether the first packet is destined for the second private network;  
obtaining an address mapping corresponding to a second destination node in the second private network and acquiring a channel key associated with a channel based on the determination,  
wherein the channel comprises a plurality of non-tunneled virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the router node,  
wherein only the channel nodes are permitted to communicate over the channel,  
wherein the channel key is updated upon an addition of a new channel node to the channel, and  
wherein the channel key is updated upon a departure of one of the channel nodes from the channel;  
sending the first packet over the channel to the second destination node using the address mapping, the address mapping reflecting a

relationship between an internal address for the second destination node for use in communicating among nodes in the second private network and an external address for the second destination node suitable for communicating over the public infrastructure;  
receiving a second non-tunneled packet from a source node in the second private network;  
determining whether the second packet is destined for the second private network;  
obtaining an address mapping corresponding to the router node based on the determination that the second packet is not destined for the second private network; and  
sending the packet over the channel to the router node using the address mapping corresponding to the router node, wherein the router node forwards the packet to a first destination node in the first private network based on an internal address in the second packet for the first destination node suitable for communicating among nodes in the first private network.